BRUHATH BANGALORE MAHANAGARA PALIKE
Byatarayanapura Division

Name of the work: Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.

First RA Bill
Test Reports

TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Ram and Company, Engineers & Contractors.
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size			**Proposed Use**	Drain
Sample Location	at Site			**Date of Sampling**	21/12/2017
				Date of Testing	21/12/2017
IS Sieve Size	**Weight Retained in gm**	**Cum. Weight Retained in gm**	**Cumulative Weight Retained in %**	**Cumulative Weight Passing in %**	**Specific Limits as per IS 383-1970 (RA-2007)**
					% of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	80	80	2.67	97.33	95-100
20.00mm	1324	1404	46.80	53.20	30-70
10.00mm	785	2189	72.97	27.03	10-35
4.75mm	620	2809	93.63	6.37	0-5
Pan	191	3000	100.00	0.00	
Remarks :	Satisfactory / Not Satisfactory				

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

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Consultant's Representative

M.N.D
AE(W7)

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

TEJUS
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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.	
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	M/S Ram and Company, Engineers & Contractors.	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	20 mm down size		**Proposed Use**	**Concrete**	
Sample Location	At Plant		**Date of Sampling**	21/12/2017	
			Date of Testing	21/12/2017	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing**
40.00 mm	0	0	0	100	**100**
20.00 mm	270	270	2.70	97.30	**95 - 100**
10.00 mm	4853	5123	51.23	48.77	**25 - 55**
4.75 mm	4215	9338	93.38	6.62	**0 - 10**
Pan	662	10000			
Remarks :	Satisfactory / Not Satisfactory				

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Bruhat Bangalore Mahanagara Pa[illegible]
Bangalore - 560 092

AE(Ldg)

Consultant's Representative

TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Ram and Company, Engineers & Contractors.

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	**Sand/M sand**	**Proposed Use**	Drain
Location/Source	**At Plant/site**	**Date of Sampling**	21/12/2017
Period of Soaking	**24 hours**	**Date of Testing**	21/12/2017

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	Average
A	Weight of sturated surface dry sample gm.	668	655	671	
B	Weight of oven - dry sample gm.	658	645	661	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1698	1688	1697	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.686	2.665	2.655	**2.669**
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.520	1.550	1.513	**1.528**

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Consultants	Tejus Consultants, Bangalore
Contractor	M/S Ram and Company, Engineers & Contractors.

SIEVE ANALYSIS

Total Weight:	**3000** gms				
Type of Materia	**Fine aggregate (River Sand/M sand)**		**Proposed Use**	Drain	
Sample Location	At Plant/site		**Date of Sampling**	21/12/2017	
			Date of Testing	21/12/2017	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing (Zone-II)**
10.00 mm	0	0	0	100.00	**100**
4.75 mm	262	262	8.73	91.27	**90 - 100**
2.36 mm	291	553	18.43	81.57	**75 - 100**
1.18 mm	510	1063	35.43	64.57	**55 - 90**
0.600 mm	570	1633	54.43	45.57	**35 -59**
0.300 mm	620	2253	75.10	24.90	**8-30**
0.150 mm	510	2763	92.10	7.90	**0 - 10**
Pan	237	3000			-

Remarks : Satisfactory / Not Satisfactory

Assistant Executive Engineer
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Bruhat Bangalore Mahanagara Palike
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Test Report on Cement

Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Sample ID	Cement
Date of Sample Tested	21/12/2017
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	39 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	323 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	4 mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	

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Test Report on Cement

Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Ram and Company, Engineers & Contractors.
Sample ID	Cement
Date of Sample Tested	21/12/2017
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	36 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	368 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	4 mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	

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Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**16/01/2018**
Sample Location	**At plant**	**Date of Testing**	**16/01/2018**

Sl. No.	**Description**		**Test No.**			**Spec Limit (%)**
			1	**2**	**3**	
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	385.00	368.00	398.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	298.00	282.00	310.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	87.00	86.00	88.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	22.60	23.37	22.11	
5	Average Aggregate impact value	(%)	22.69			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	At plant	**Date of Sampling**	**16/01/2018**
		Date of Testing	**16/01/2018**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	860	60	800	90
16.0	12.5	1102	120	982	140
12.5	10.0	760	85	675	50
10.0	6.3	520	79	441	45
Total		**3242**	**344**	**2898**	**325**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.61
Elongation Index(%):	11.21
Combined FI+EL (%)	21.83

Assistant Executive Engineer
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Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092
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Consultant's Representative

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Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	At plant	**Date of Sampling**	**16/01/2018**
		Date of Testing	**16/01/2018**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	858	75	783	75
16.0	12.5	1136	130	1006	115
12.5	10.0	749	80	669	65
10.0	6.3	620	65	555	55
Total		**3363**	**350**	**3013**	**310**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.41
Elongation Index(%):	10.29
Combined FI+EL (%)	20.70

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092
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Consultant's Representative

Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	16/01/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	**Date of Sampling:**	16/01/2018
		Date of testing:	16/01/2018
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	590	590	5.90	94.10	95-100
22.4	2130	2720	27.20	72.80	60-80
11.2	1825	4545	45.45	54.55	40-60
4.75	1895.0	6440	64.40	35.60	25-40
2.36	1356.0	7796	77.96	22.04	15-30
0.6	790.0	8586	85.86	14.14	8.0-22.0
0.075	965.0	9551	95.51	4.49	0-8
Pan	449.0				
Total	10000.0				

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Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	16/01/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 2

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	**Date of Sampling:**	16/01/2018
		Date of testing:	16/01/2018
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	362	362	3.62	96.38	95-100
22.4	2568	2930	29.30	70.70	60-80
11.2	2156	5086	50.86	49.14	40-60
4.75	1348.0	6434	64.34	35.66	25-40
2.36	1265.0	7699	76.99	23.01	15-30
0.6	1120.0	8819	88.19	11.81	8.0-22.0
0.075	720.0	9539	95.39	4.61	0-8
Pan	461.0				
Total	10000.0				

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Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	16/01/2018
Type of Mix	:	WMM
Sample I/D	:	WMM 3

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	Date of Sampling:	16/01/2018
		Date of testing:	16/01/2018
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	310	310	3.10	96.90	95-100
22.4	2568	2878	28.78	71.22	60-80
11.2	1895	4773	47.73	52.27	40-60
4.75	1564.0	6337	63.37	36.63	25-40
2.36	1156.0	7493	74.93	25.07	15-30
0.6	1254.0	8747	87.47	12.53	8.0-22.0
0.075	947.0	9694	96.94	3.06	0-8
Pan	306.0				
Total	10000.0				

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Consultant's Representative

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Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.	
Client	BRUHAT BANGALORE MAHANAGARA PALIKE	
Consultant	M/s Tejus Consultants	
Contractor	M/S Ram and Company, Engineers & Contractors.	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**17/01/2018**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6234	6122
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9713	9745
Wt. of sand in cone (w3) gms.	835	842
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3452	3413
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.37	2.35
Moisture meter reading(moisture content)	12.10	12.10
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.11	2.10
MDD	2.14	2.13
OMC	13.50%	13.50%
% compaction obtained	98.62	98.41
% compaction required	98%	98%

Assistant Executive Engineer
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Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.	
Client	BRUHAT BANGALORE MAHANAGARA PALIKE	
Consultant	M/s Tejus Consultants	
Contractor	M/S Ram and Company, Engineers & Contractors.	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**17/01/2018**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6210	6268
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9715	9702
Wt. of sand in cone (w3) gms.	845	825
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3440	3473
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.36
Moisture meter reading(moisture content)	12.00	12.00
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.11	2.11
MDD	2.14	2.14
OMC	13.50%	13.50%
% compaction obtained	98.67	98.64
% compaction required	98%	98%

Assistant Executive Engineer
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Bangalore - 560 092
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Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	**Date of Sampling**	**18/01/2018**
Sample Location	At plant	**Date of Testing**	**18/01/2018**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	366.00	352.00	369.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	280.00	272.00	286.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	86.00	80.00	83.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.50	22.73	22.49	
5	Average Aggregate impact value	(%)	22.91			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

AE(W7)

Consultant's Representative

TEJUS CONSULTANTS

Project	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	DBM	Proposed Use	DBM
Sample Location	At plant	Date of Sampling	18/01/2018
		Date of Testing	18/01/2018

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7852	710	7142	413
31.5	25.0	4251	187	3569	202
25.0	20.0	2356	298	1978	254
20.0	16.0	1254	340	1000	280
16.0	12.5	530	115	415	160
12.5	10.0	268	78	230	98
10.0	6.3	112	84	80	89
Total		**16623**	**1812**	**14414**	**1496**

Results

Flakiness Index(%):	10.90
Elongation Index(%):	10.38
Combined FI+EL (%)	21.28

Assistant Executive Engineer
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Bangalore - 560 092

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Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	18/01/2018
Type of Mix	:	DBM
Sample I/D	:	DBM-1

GRADATION FOR DBM

(As per MORT&H 500-10,Grading-2)

Sample Location:	At plant	**Date of Sampling:**	18/01/2018
		Date of testing:	18/01/2018
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	1500.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	78	78	5.20	94.80	90-100
19.00	122	200	13.33	86.67	71-95
13.20	245	445	29.67	70.33	56-80
4.750	368	813	54.20	45.80	38-54
2.360	175	988	65.87	34.13	28-42
0.300	250	1238	82.53	17.47	7-21
0.075	152	1390	92.67	7.33	2-8
Pan	110				
Total	1500.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	19/01/2018
Type of Mix	:	DBM
Sample I/D	:	DBM-1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	812	910
2. Weight of Mixture after extraction, g	777	871
3. Weight of Bitumen	35	39
4. Weight of filter paper before extraction, g	2.30	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	1.70	2.00
7. Weight of Bitumen & fines	36.70	41.00
8. Bitumen content in %	4.52	4.51
9. Average Bitumen content in %	4.51	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	At site	**Date of Sampling:**	19/01/2018
		Date of testing:	19/01/2018
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	777

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	38.0	38.0	4.89	95.11	90-100
19.00	120.0	158.0	20.33	79.67	71-95
13.20	98.0	256.0	32.95	67.05	56-80
4.750	135.0	391.0	50.32	49.68	38-54
2.360	110.0	501.0	64.48	35.52	28-42
0.300	126.0	627.0	80.69	19.31	7-21
0.075	95.0	722.0	92.92	7.08	2-8
Pan	55.0				
Total	777.0				

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Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	19/01/2018
Type of Mix	:	Tack coat
Sample I/D	:	1

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.752	0.728
Final weight of plate after application of tack Coat (c)	Kg	0.775	0.751
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	19/01/2018
Type of Mix	:	Tack coat DBM
Sample I/D	:	2

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.761	0.743
Final weight of plate after application of tack Coat (c)	Kg	0.784	0.766
Weight of tack coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors

AGGREGATE IMPACT VALUE **(IS: 2386 Part - 4)**

Proposed Use	BC	**Date of Sampling**	**21/01/2018**
Sample Location	At plant	**Date of Testing**	**21/01/2018**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	348.00	358.00	384.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	270.00	278.00	302.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	78.00	80.00	82.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	22.41	22.35	21.35	
5	Average Aggregate impact value	(%)	22.04			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	M/S Ram and Company, Engineers & Contractors

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	BC	**Proposed Use**	**BC**
Sample Location	At plant	**Date of Sampling**	**21/01/2018**
		Date of Testing	**21/01/2018**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	951	112	839	80
16.0	12.5	1125	98	1027	120
12.5	10.0	670	70	600	70
10.0	6.3	540	60	480	40
Total		**3286**	**340**	**2946**	**310**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.35
Elongation Index(%):	10.52
Combined FI+EL (%)	20.87

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Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	21/01/2018
Type of Mix	:	BC
Sample I/D	:	BC1

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	21/01/2018
		Date of testing:	21/01/2018
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	110	110.0	9.17	90.83	79 - 100
9.50	92	202.0	16.83	83.17	71 - 95
4.75	240	442.0	36.83	63.17	53 - 71
2.360	128	570.0	47.50	52.50	42 - 58
1.180	110	680.0	56.67	43.33	34 - 48
0.600	98	778.0	64.83	35.17	26 - 38
0.300	110	888.0	74.00	26.00	18 - 28
0.150	100	988.0	82.33	17.67	12 - 20
0.075	115	1103.0	91.92	8.08	4 - 10
Pan	97.0				
Total	1200.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	22/01/2018
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	945	885
2. Weight of Mixture after extraction, g	892	836
3. Weight of Bitumen	53	49
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.30
6. Weight of fines, g	2.00	2.30
7. Weight of Bitumen & fines	55.00	51.30
8. Bitumen content in %	5.82	5.80
9. Average Bitumen content in %	**5.81**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	22/01/2018
		Date of testing:	22/01/2018
Type of material & Purpose:	**BC**	Oven Dry Wt.(gms):	892.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	85	85.0	9.53	90.47	79 - 100
9.50	121	206.0	23.09	76.91	71 - 95
4.75	140	346.0	38.79	61.21	53 - 71
2.360	111	457.0	51.23	48.77	42 - 58
1.180	98	555.0	62.22	37.78	34 - 48
0.600	75	630.0	70.63	29.37	26 - 38
0.300	64	694.0	77.80	22.20	18 - 28
0.150	40	734.0	82.29	17.71	12 - 20
0.075	80	814.0	91.26	8.74	4 - 10
Pan	78.0				
Total	892.0				

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Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	22/01/2018
Type of Mix	:	Tack coat
Sample I/D	:	1

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	**Unit**	**Test No**	
		1	**2**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.823	0.862
Final weight of plate after application of tack Coat (c)	Kg	0.846	0.885
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Name of Work	:	Improvements to Roads and drains at Amruthanagara, Verma Layout, Bhuvaneshwari Nagara and Surrounding Areas in ward No 07 - Byatarayanapura, Kodigehalli Sub Division.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	22/01/2018
Type of Mix	:	Tack coat
Sample I/D	:	2

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	**Unit**	**Test No**	
		1	**2**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.795	0.771
Final weight of plate after application of tack Coat (c)	Kg	0.818	0.794
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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